Tanana Mainstem (Alaska)
Survey Design

Contact:
Doug Dasher

Description of Sample Design

Target population: Mainstem of Tanana River within Alaska.

Sample Frame: To identify the Tanana, shapefile was provided by USGS Alaska Science Center (Ted Moran).

Survey Design: A Generalized Random Tessellation Stratified (GRTS) survey design for a linear resource was used. The GRTS design includes reverse hierarchical ordering of the selected sites.

Multi-density categories: None

Stratification: None.

Panels: Single panel.

Expected sample size: Expected sample size 50 sites.

Over sample: 700% (700 sites).

Site Use: Within State, the base design has 50 sites. Sites are listed in SiteID order and must be used in that order. All sites that occur prior to the last site used must have been evaluated for use and then either sampled or reason documented why that site was not used. As an example, if 50 sites are to be sampled and it required that 80 sites be evaluated in order to locate 50 sampleable stream sites, then the first 80 sites in SiteID order would be used.

If the design is implemented over two years, then use the sites in siteID order within year and then continue with the next siteID in the next year. If want to identify revisit sites, use the first 5 sites in siteID order that were actually sampled in the field each year.

Sample Frame Summary

Total stream length (in km) in the sample frame is 46,817.17 km.

Site Selection Summary

Number of sites in sample

panel	stratum None	Sum
OverSamp	700	700
Panel_1	50	50
Panel_2	50	50
Sum	800	800

Description of Sample Design Output:

The dbf file for the shapefile ("KS Registered Stream Sites") has the following variable definitions:

Variable Name	Description
SiteID	Unique site identification (character)
x	x-coordinate from map projection (see below)
y	y-coordinate from map projection (see below)
mdcaty	Multi-density categories used for unequal probability selection
weight	Weight (in km), inverse of inclusion probability, to be used in statistical analyses
stratum	Strata used in the survey design
panel	Identifies base sample by panel name and Oversample by OverSamp
EvalStatus	Site evaluation decision for site: TS: target and sampled, LD: landowner denied access, etc (see below)
EvalReason	Site evaluation text commment
auxiliary variables	Remaining columns are from the sample frame provided

Projection Information

PROJCS["NAD_1983_Albers",
GEOGCS["GCS_North_American_1983",
DATUM["D_North_American_1983",
SPHEROID["GRS_1980",6378137.0,298.257222101]],
PRIMEM["Greenwich",0.0],UNIT["Degree",0.0174532925199433]],
PROJECTION["Albers"],PARAMETER["False_Easting",0.0],
PARAMETER["False_Northing",0.0],
PARAMETER["Central_Meridian",-96.0],
PARAMETER["Standard_Parallel_1",29.5],
PARAMETER["Standard_Parallel_2",45.5],
PARAMETER["Latitude_Of_Origin",23.0],
UNIT["Meter",1.0]]

Evaluation Process

The survey design weights that are given in the design file assume that the survey design is implemented as designed. Typically, users prefer to replace sites that can not be sampled with other sites to achieve the sample size planned. The site replacement process is described above. When sites are replaced, the survey design weights are no longer correct and must be adjusted. The weight adjustment requires knowing what happened to each site in the base design and the over sample sites. EvalStatus is initially set to "NotEval" to indicate that the site has yet to be evaluated for sampling. When a site is evaluated for sampling, then the EvalStatus for the site must be changed. Recommended codes are:

EvalStatus Code	Name	Meaning
TS	Target Sampled	site is a member of the target population and was sampled
LD	Landowner Denial	landowner denied access to the site
PB	Physical Barrier	physical barrier prevented access to the site
NT	Non-Target	site is not a member of the target population
NN	Not Needed	site is a member of the over sample and was not evaluated for sampling
Other codes		Many times useful to have other codes. For example, rather than use NT, may use specific codes indicating why the site was non-target.

Statistical Analysis

Any statistical analysis of data must incorporate information about the monitoring survey design. In particular, when estimates of characteristics for the entire target population are computed, the statistical analysis must account for any stratification or unequal probability selection in the design. Procedures for doing this are available from the Aquatic Resource Monitoring web page given in the bibliography. A statistical analysis library of functions is available from the web page to do common population estimates in the statistical software environment R.

For further information, contact

Anthony (Tony) R. Olsen
USEPA NHEERL
Western Ecology Division
200 S.W. 35th Street
Corvallis, OR 97333
Voice: (541) 754-4790
Fax: (541) 754-4716
email: Olsen.Tony@epa.gov

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Web Page: http://www.epa.gov/nheerl/arm